

Notice of Allowability

Application No.

09/752,637

Examiner

Tesfaldet Bocure

Applicant(s)

FOSCHINI ET AL.

Art Unit

2631

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 11/28/05.
2. ☒ The allowed claim(s) is/are 1-4,6-12,14-19 and 21-60, renumbered as 1-57.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☐ All b) ☐ Some* c) ☐ None of the:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
 5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☐ Interview Summary (PTO-413), Paper No./Mail Date _____
7. ☐ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____

TESFALDET BOCCURE
PRIMARY EXAMINER

REASONS FOR ALLOWANCE

1. The following is an examiner's statement of reasons for allowance: The claimed subject matter in claims 1-4,6-12,14-19 and 21-60 is allowable because the prior art of record fail to teach or fairly suggest the claimed "a method or apparatus for use in a transmitter adapted to employ four transmit elements to transmit a source bit stream. the method comprising the steps or and means for:

dividing said source bit stream into L data substreams, $L > 2$, and grouping derivatives of symbols derived from each of said data substreams to form four transmit time sequences, one sequence for each transmit element, said derivative of said symbols are members of the group consisting of: a negative or one of said symbols, a negative of a complex conjugate of one of said symbols, one of said symbols, symbol developed by encoding at least one sample of at least one of said data substreams. and an uncoded sample of at least one of said data substreams; wherein each of said time sequence spans L symbol periods and including at least one derivative of at least one symbol from each of said L data substreams; and at least one of said derivatives of said symbols is a complex conjugate of one of said symbols as in claims 1,9,16,25,31 and 42."

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

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2. It should be noted that the closest reference (US patent number 6,804,307) used to reject the claims uses two information symbols S_1 and S_2 , i.e. $L=2$, a Rate of .5, while the claimed invention uses information symbols $L>2$, which can be 3 or more and can achieve a Rate of .75 and higher. US patent number 6,804,307 suggest that that "the transmission rate R , defined as to the ratio between the number of information symbols to the number of transmitted symbols in a code words is desirable to be as large as possible, ideally equal to 1," however, he does not disclose what the minimum number of source symbols, i.e., the values of L are and how it can be achieved. The same is true with the cited references, US patent numbers 6,317,411 and 6,804,307 and European patent Application number EP 1-187-363.

Conclusion

3. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. US patent numbers 6,317,411 and 6,778,612 issued to Whinnett et al. and Lozano et al., respectively, European Patent number EP 1 187 363 A1 issued to Lozano et al., and IEE and IEEE publications "Space-Time Coding for Capacity Enhancement in Future Generation Wireless Communication Networks," "Space-Time Coding Base Transmit Diversity Using an Adaptive Precoder for WCDMA System" and "Adaptive Space-Time Transmit Diversity For MIMO System" to Bevan et al., Hayoung and Hong respectively disclose a space time diversity transmitter for transmitting source symbols by a plurality of antennas.

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4. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tesfaldet Bocure whose telephone number is (571) 272-3015. The examiner can normally be reached on Mon-Thur (7:30a-5:00p) & Mon.-Fri (7:30a-5:00p).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mohammad H. Ghayour can be reached on (571) 272-3021. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

T.Bocure

Tesfaldet Bocure
Primary Examiner
Art Unit 2631

